

Application No.: 10/564101

Case No.: 58745US004

Amendments to the Claims:

The following Listing of Claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1-17 (cancelled).

18. (new) A dental composition comprising:

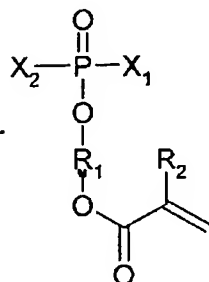
- a) at least one phosphoric acid ester having at least one substituent with one ethylenically unsaturated moiety, wherein the substituent is bonded to the phosphorous atom;
- b) at least one phosphoric acid ester having at least one substituent with two or more ethylenically unsaturated moieties, wherein the substituent is bonded to the phosphorous atom;
- c) at least one initiator; and
- d) an additional component selected from unsaturated monomers and unsaturated prepolymers.

19. (new) The dental composition of claim 18, further comprising an additive selected from the group consisting of stabilizers, unsaturated polymers, solvents, fluoride release agents, non reactive inorganic fillers, and photobleachable colorants.

20. (new) The dental composition according to claim 18, wherein component (a) is represented by formula (I)

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(I)

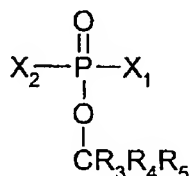
wherein R_1 is selected from the group consisting of (i) an alkylene having 1 to 4 C atoms, (ii) or a bivalent organic group having 1 to 4 carbon atoms composed of two or more hydrocarbon residues bonded to one another by one or more ether or thioether linkages, and (iii) or an aryl, each optionally substituted with OH;

wherein R_2 is H, or CH_3 ;

wherein X_1 is OH or halogen; and

wherein X_2 is X_1 or $-\text{O}-\text{R}_1-\text{OOC}-\text{CR}_2=\text{CH}_2$,

and component (b) is represented by formula (II),



(II)

wherein R_3 , R_4 , and R_5 are independently selected from (i) H, (ii) linear or branched alkyl groups having 1 to 4 carbon atoms, optionally substituted with OH, (iii) aryl groups, optionally substituted with OH, and (iv) organic groups having 5 to 15 carbon atoms composed of 2 to 6 saturated or ethylenically unsaturated hydrocarbon residues bonded to one another by one or more ether, thioether, ester, thioester, thiocarbonyl, amide, urethane, carbonyl and/or sulfonyl linkages, each optionally substituted with OH,

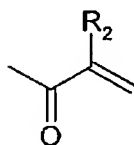
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wherein at least 2 of the groups R_3 , R_4 , and R_5 comprise at least 1 group according to formula (III)

or

at least 1 of the groups R_3 , R_4 , and R_5 comprises at least 2 groups according to formula (III)



(III)

and wherein $\text{X}_2 = \text{X}_1$ or $-\text{O}-\text{CR}_3\text{R}_4\text{R}_5$ or $-\text{O}-\text{R}_1-\text{OOC}-\text{CR}_2=\text{CH}_2$.

21. (new) The dental composition according to claim 18, wherein component (b) is present in an amount of about 1 to about 500 parts by weight based on about 100 parts by weight of component (a).

22. (new) The dental composition according to claim 18, wherein the total amount of components (a) and (b) in the composition is about 10 to about 90 parts by weight.

23. (new) The dental composition according to claim 18, wherein the prepolymer is present in an amount of about 0 to about 30 parts by weight.

24. (new) The dental composition according to claim 23, wherein the prepolymer does not contain any hydroxy, acidic or ionic groups.

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25. (new) The dental composition according to claim 23, wherein the prepolymer has an Mw in the range of about 600 to about 20000.

26. (new) The dental composition according to claim 18 having a contact angle versus deionized water of more than 15°, if the composition is cured in the presence of air, and of more than 50°, if the composition is cured in the absence of air.

27. (new) The dental composition according to claim 18 having an adhesion to enamel and/or dentin in the range of about 2 to about 15 MPa.

28. (new) The dental composition according to claim 18 having a water uptake of less than 5 % by weight with respect to the cured composition measured after having immersed the composition for 5 h in water of 37°C.

29. (new) The dental composition according to claim 27 having an enamel adhesion of at least 5 MPa.

30. (new) The dental composition according to claim 18, wherein component (a) is selected from the group consisting of 2-methacryloyloxyethyl phosphate, 2-methacryloyloxypropyl phosphate, 3-methacryloyloxypropyl phosphate, 2-methacryloyloxybutyl phosphate, 3-methacryloyloxybutyl phosphate, 4-methacryloyloxybutyl phosphate, 5-methacryloyloxy-3-oxa-pentyl phosphate, bis(2-methacryloyloxyethyl) phosphate, bis(2-methacryloyloxypropyl) phosphate, bis(3-methacryloyloxypropyl) phosphate, bis(2-methacryloyloxybutyl) phosphate, bis(3-methacryloyloxybutyl) phosphate, bis(4-methacryloyloxybutyl) phosphate, bis(5-methacryloyloxy-3-oxa-pentyl) phosphate, and mixtures thereof.

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31. (new) The dental composition according to claim 18, wherein component (b) is selected from the group consisting of glycerol-1,3-dimethacrylate-2-phosphate, glycerol-1,2-dimethacrylate-3-phosphate, bis(glycerol-1,3-dimethacrylate) phosphate, bis(glycerol-1,2-dimethacrylate) phosphate, (glycerol-1,2-dimethacrylate),(glycerol-1,3-dimethacrylate) phosphate, (trimethylolpropane dimethacrylate) phosphate, bis(trimethylolpropane dimethacrylate) phosphate, (trimethylolethane dimethacrylate) phosphate, bis(trimethylolethane dimethacrylate) phosphate, pentaerythritol trimethacrylate phosphate and mixtures thereof.

32. (new) A method for preparing a dental composition comprising the step of mixing the following following components:

- a) at least one phosphoric acid ester having at least one substituent with one ethylenically unsaturated moiety wherein the substituent is bonded to the phosphorous atom,
- b) at least one phosphoric acid ester having at least one substituent with two or more ethylenically unsaturated moieties, wherein the substituent is bonded to the phosphorus atom,
- c) at least one initiator; and
- d) an additional component selected from unsaturated monomers and unsaturated prepolymers.